REMARKS

Claims 1–16 are pending in the present application.

Claims 12–16 were added.

Reconsideration of the claims is respectfully requested.

35 U.S.C. § 103 (Obviousness)

Claims 1–4, 6–8 and 11 were rejected under 35 U.S.C. § 103(a) as being unpatentable

over U.S. Patent No. 6,275,531 to *Li*. Claims 9–10 were rejected under 35 U.S.C. § 103(a) as

being unpatentable over *Li* in view of U.S. Patent No. 5,742,892 to *Chadda*. These rejections

are respectfully traversed.

In *ex parte* examination of patent applications, the Patent Office bears the burden of

establishing a *prima facie* case of obviousness. MPEP § 2142; *In re Fritch*, 972 F.2d 1260, 1262,

23 U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992). The initial burden of establishing a *prima facie*

basis to deny patentability to a claimed invention is always upon the Patent Office. MPEP §

2142; *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); *In re*

Piasecki, 745 F.2d 1468, 1472, 223 U.S.P.Q. 785, 788 (Fed. Cir. 1984). Only when a *prima facie*

case of obviousness is established does the burden shift to the applicant to produce evidence of

nonobviousness. MPEP § 2142; *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444

(Fed. Cir. 1992); *In re Rijckaert*, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993).

If the Patent Office does not produce a *prima facie* case of unpatentability, then without more

the applicant is entitled to grant of a patent. *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); *In re Grabiak*, 769 F.2d 729, 733, 226 U.S.P.Q. 870, 873 (Fed. Cir. 1985).

A *prima facie* case of obviousness is established when the teachings of the prior art itself suggest the claimed subject matter to a person of ordinary skill in the art. *In re Bell*, 991 F.2d 781, 783, 26 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1993). To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed invention and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. MPEP § 2142.

The present invention relates generally to streaming video comprising baser layer data and enhancement layer data, where a detected loss of bandwidth during a given interval triggers transmission of less enhancement layer data.

Each of the independent claims recites performing actions with respect to "a given interval," and thus requires that the streaming video data be logically divided into time intervals, which the specification teaches are integer number of clock periods T. With regard such

intervals, the Office Action states:

> The applicant should also note that the claims *"given interval"* is analogous to Li's interval disclosed in col. 1, lines 46–47.

Paper No. 4, page 3. However, the cited portion of *Li* actually relates to encoding video data, not to streaming the encoded video data:

> The basic idea behind MPEG video compression is to remove spatial redundancy within a video frame and temporal redundancy between video frames. The DCT-based (Discrete Cosine Transform) compression is used to reduce spatial redundancy and motion compensation is used to exploit temporal redundancy. The images in a video stream usually do not change much within small time intervals. Thus, the idea of motion-compensation is to encode a video frame based on other video frames temporally close to it..

Li, column 1, lines 41–49. The cited portion of *Li* thus discloses merely that redundancy within consecutive fields or frames of video data may be exploited during encoding, and does not teach or suggest logically dividing the streaming video data into intervals.

The independent claims also recite determining whether a loss of bandwidth has occurred during a particular interval. The Office Action concedes that such a function is not shown or suggested by *Li*, but argues that bandwidth limitations are sufficiently similar to prompt those skilled in the art to modify the teachings of *Li* to achieve this result:

> It is noted that Li does not specifically disclose determining loss of bandwidth occuring as one of the factors for effecting the number of enhancement layer to be transmitted as specified in claim 1.
> However, the solution provided by Li in col. 3, lines 28–42 is similar as claimed in that when the bandwidth is limited because of various conditions in which loss of bandwidth can be one of them, the amount of enhancement layers may be restricted to satisfy the bandwidth constraint.

Paper No. 4, page 3. However, the cited portion of *Li* relates to NOT to <u>loss</u> of bandwidth (due to channel noise and/or the need to retransmit base layer data bits, etc.), but instead to the absence of required bandwidth capabilities to receive the data at the level encoded:

> For instance, the server which provides the transmission channel to the destination point may be experiencing large demand on its resources from other users, in order to try and accommodate all of its users the server will prioritize the data and only transmit the higher priority coded packets of information. The transmission channel may be the limiting factor because of the bandwidth of the channel, i.e. Internet access port, Ethernet protocol, LAN, WAN, twisted pair cable, co-axial cable, etc. or the destination device itself, i.e. modem, absence of an enhanced video card, etc. may not be able to receive the additional bandwidth made available to it. In these instances only M number (M is an integer number=0, 1, 2, ...) of enhancement layers may be received, wherein N number (N is an integer number=0, 1, 2, ...) of enhancement layers were generated at the encoding stage, $M \leq N$.

Li, column 3, lines 28–42. Thus, *Li* addresses serving multiple recipients, some of which lack the capacity to receive the video data at the granularity at which it was encoded, where the maximum bandwidth of various channels is known. *Li* does not teach or suggest determining whether a portion of that maximum bandwidth is lost during a given interval, nor even teach or suggest a mechanism by which such a determination may be made. No motivation of incentive has been identified for the proposed modification (mere functional similarity or equivalence, when it exists, does not satisfy the requirement of a motivation or incentive for combination and/or modification of the prior art teachings), and the teachings of *Li* thus provide no reasonable expectation of success for the proposed modification.

Finally, each of the independent claims recites adapting the transmission to any loss of

bandwidth during the given interval by calculating a reduced amount of enhancement data which may be transmitted given the constraint of the bandwidth loss, and transmitting such a reduced amount of enhancement layer data. Such a feature is not shown or suggested by the cited reference. *Li* teaches adapting an <u>entire</u> video data stream to constraints such as available bandwidth for a particular client, or the priority of concurrently transmitted video data streams, but does not teach of suggest adapting the granularity of the video data stream <u>during streaming</u> to accommodate a loss of bandwidth at a particular time.

Claims 3 and 8 recite distributing the reduction in enhancement layer data evenly over a predetermined number of frames. Such a feature is not shown or suggested by *Li*. As noted in the Office Action, *Li* teaches adapting transmissions of multiple video streams based on individual priorities associated with each stream. However, *Li* does not teach or suggest allocating any constraints on lower priority streams evenly across all such lower priority streams. Thus, even if adaptation based on priority were analogous to adaptation based on lost bandwidth, *Li* does not teach or suggest the recited limitation.

Therefore, the rejection of claims 1–4, 6–11 under 35 U.S.C. § 103 has been overcome.

AMENDMENTS WITH MARKINGS TO SHOW CHANGES MADE

Claims 2 and 10 were amended herein as follows:

1   2. (amended) The method according to claim 1, further comprising:

2   transmitting non-enhancement layer data during the given interval.

1   10. (amended) An apparatus for streaming scalable video including base layer data and

2   enhancement layer data, comprising:

3   a memory which stores executable code; and

4   a processor which executes code stored in the memory so as to (i) transmit the base layer

5   data for a given interval, (ii) determine if a loss of bandwidth has occurred in the given interval,

6   (iii) select a predetermined number of frames to distribute the loss of bandwidth over, (iv)

7   calculate a reduced amount of enhancement layer data to transmit in the predetermined number

8   of frames, and (v) transmit the reduced amount of enhancement layer data in the given interval.

SUMMARY

For the reasons given above, the Applicant respectfully requests reconsideration and allowance of pending claims and that this Application be passed to issue. If any outstanding issues remain, or if the Examiner has any further suggestions for expediting allowance of this Application, the Applicant respectfully invites the Examiner to contact the undersigned at the telephone number indicated below or at *wmunck@davismunck.com*.

The Commissioner is hereby authorized to charge any additional fees connected with this communication or credit any overpayment to Deposit Account No. 50-0208.

Respectfully submitted,

DAVIS MUNCK, P.C.

Date: _April 3, 2002_

William A. Munck
Registration No. 39,308

P.O. Drawer 800889
Dallas, Texas 75380
Phone: (214) 922-9221
Fax: (214) 969-7557
E-mail: *wmunck@davismunck.com*